

EXHIBIT A

Hearing on Motion to Dismiss

Entropic Communications, LLC
v.
DIRECTV, LLC et al.

Case No. 2:23-cv-01043-JWH-KES
Consolidated with Case Nos.:
2:23-CV-01047-JWH-KES
2:23-CV-01048-JWH-KES
2:23-CV-05253-JWH-KES

Claims are the focus of a § 101 inquiry



Ultimately, [t]he § 101 inquiry must focus on the ***language of the Asserted Claims*** themselves, and the specification cannot be used to import details from the specification if those details are not claimed.

ChargePoint, Inc. v. SemaConnect, Inc., 920 F.3d 759, 769 (Fed. Cir. 2019).

U.S. Patent No. 8,363,681

METHOD AND APPARATUS FOR USING RANGING MEASUREMENTS IN A
MULTIMEDIA HOME NETWORK

U.S. Patent No. 8,363,681

(12) United States Patent
Mueller(10) Patent No.: US 8,363,681 B2
(45) Date of Patent: Jan. 29, 2013

- (54) **METHOD AND APPARATUS FOR USING RANGING MEASUREMENTS IN A MULTIMEDIA HOME NETWORK**
- (75) Inventor: Arndt Mueller, San Diego, CA (US)
- (73) Assignee: Entropic Communications, Inc., San Diego, CA (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 462 days.
- (21) Appl. No.: 12/580,127
- (22) Filed: Oct. 15, 2009
- (65) **Prior Publication Data**
US 2010/0098110 A1 Apr. 22, 2010
- Related U.S. Application Data**
- (60) Provisional application No. 61/105,942, filed on Oct. 16, 2008; provisional application No. 61/144,061, filed on Jan. 12, 2009; provisional application No. 61/144,676, filed on Jan. 14, 2009.
- (51) **Int. Cl.**
H04J 3/06 (2006.01)
H04L 12/28 (2006.01)
H04L 12/56 (2006.01)
- (52) **U.S. Cl.** 370/510; 370/511; 370/513; 370/514; 370/519
- (58) **Field of Classification Search** 370/395 62; 370/518, 350, 503, 509-514, 519
See application file for complete search history.
- (56) **References Cited**
U.S. PATENT DOCUMENTS
5,349,582 A 9/1994 Horiike et al.
6,986,885 B1 10/2005 Khanna et al.
7,084,296 B1 5/2006 Sorells et al.
2009/0287064 A1 12/2009 Tanaka et al.
- (10) Patent No.: US 8,363,681 B2
(45) Date of Patent: Jan. 29, 2013
- 2007/0133386 A1 6/2007 Kim et al.
2008/0012473 A1 1/2008 Proctor, Jr. et al.
2008/0056308 A1* 3/2008 Zamateo 370/503
2008/0076432 A1 3/2008 Senarath et al.
2008/0271076 A1* 10/2008 Schlack 725/39
- FOREIGN PATENT DOCUMENTS**
WO 2008/039951 A1 4/2008
- OTHER PUBLICATIONS**
Examination Report for App No. GB1104519.2, completed May 23, 2012.
- * cited by examiner
- Primary Examiner**—Michael Thier
Assistant Examiner—Benjamin H Elliott, IV
(74) **Attorney, Agent, or Firm**—Bruce Greenhaus

Title: Method and apparatus for using ranging measurements in a multimedia home network

Referred to in Original Complaint (Dkt. 1) as: “the Clock Sync Patent”

Filing Date: October 15, 2009

Issue Date: January 29, 2013

The '681 Patent is directed to the abstract idea of synchronizing clock times.

Step 1 – Claims are directed to the abstract idea of “synchronizing clock times”

tionality that can be included in the concept. Accordingly, the claimed invention is not restricted to the illustrated example architectures or configurations, but the desired features can be implemented using a variety of alternative architectures and configurations. Indeed, it will be apparent to one of skill in the art how alternative functional, logical or physical partitioning and configurations can be implemented to implement the desired features. Also, a multitude of different constituent

'681 Patent, 11:23-30.

disclosure. The method begins at operation 52, with a first node (Node#1) transmitting a first network packet P1 to a second node (Node#2) over a communication network. The network packets can be one of several different packet types including, but not limited to, data packets, control packets, and probe packets. The type of packet will vary depending on the type of communication network involved. For example, on a MoCA network, packet P1 could be an error vector magnitude packet (EVM), Beacon packet, Admission Request Packet, Admission Response Packet, or a MAP packet. Additionally, the packet may be transmitted in a variety of different modes, including, but in no way limited to, one-to-many 'broadcast' packets, many-to-one packets (e.g., OFDMA packets), one-to-one 'unicast' packets.

'681 Patent, 6:50-64.

The '681 Patent expressly does not limit the purported invention to any hardware or software architecture or configuration. Instead, it acknowledges that the claimed time synchronization can be implemented in any context using any means.

Step 1 – Claims are directed to the abstract idea of “synchronizing clock times”

1. A method for **synchronizing a plurality of nodes on a communication network**, comprising:

exchanging a local clock time between a first node and a second node over the communication network, wherein the exchange comprises:

transmitting a first packet from the **first node to the second node**, wherein the first packet includes a first packet clock time set to the local clock time of the first node at transmission time, and includes a scheduled arrival clock time, and

setting the local clock time of the second node to the first packet clock time;

performing a ranging method between the **first and second nodes** based on the local clock time exchanged, wherein the ranging method results in an estimated propagation delay between the **first and second node**, and wherein the ranging method comprises:

transmitting a second packet from the second node to the first node, wherein the second packet is transmitted from the second node at the scheduled arrival clock time, and wherein the second packet is received by the first node at an actual arrival clock time,

calculating and storing the estimated propagation delay at the first node, wherein calculating the estimated propagation delay is based on the scheduled arrival clock time and the actual arrival time, and

transmitting a third packet from the first node to the second node, wherein the third packet comprises the estimated propagation delay; and

adjusting the local clock time of either the first or second node based on the estimated propagation delay, **thereby resulting in a synchronized local clock time between the first and second node.**

Dependent Claims Do Not Change Analysis

- 6. The method of claim 1, wherein the first node is a network coordinator.
- 9. The method of claim 1, wherein the communication network is a mesh network.
- 10. The method of claim 1, wherein the communication network operates in accordance with a Multimedia over Coax Alliance (MoCA) standard.

The dependent claims merely require the use of the abstract idea in a particular context, which alone is insufficient to transform an invention into patent eligible subject matter.

Dependent Claims Do Not Change Analysis



[M]erely limiting the field of use of the abstract idea to a particular existing technological environment does not render the claims any less abstract.

Affinity Labs of Tex. v. DIRECTV, LLC, 838 F.3d 1253, 1259 (Fed. Cir. 2016)

Case 2:23-cv-01043-JWH-KES Document 103 Filed 09/06/23 Page 1 of 17 Page ID #:2239

UNITED STATES DISTRICT COURT
FOR THE CENTRAL DISTRICT OF CALIFORNIA

ENTROPIC COMMUNICATIONS,
LLC,

Plaintiff,

v.

DISH NETWORK CORPORATION;
DISH NETWORK LLC;
DISH NETWORK SERVICE LLC.;
and
DISH NETWORK CALIFORNIA
SERVICE CORPORATION,

Defendants.

Case No. 2:23-cv-01043-JWH-KESx

ORDER ON DISH DEFENDANTS'
MOTION TO DISMISS UNDER 35
U.S.C. § 101 [ECF No. 50]

see also Cellspin Soft, Inc. v. Fitbit, Inc., 927 F.3d 1306, 1315 (Fed. Cir. 2019). The “transmit” and “receive” limitations of Claim 11 are no different, and the coaxial cable network context does not change the analysis. *See Affinity Labs*, 838 F.3d at 1258-59.

DISH Order (Dkt. 103) at 10.

Step 2 – Alleged Inventive Concept Is Untethered to the Claims

Entropic's Amended Complaint

1. A method for **synchronizing a plurality of nodes on a communication network**, comprising:

exchanging a local clock time between a first node and a second node over the communication network, wherein the exchange comprises:

transmitting a first packet from the **first node to the second node**, wherein the first packet includes a first packet clock time set to the local clock time of the first node at transmission time, and includes a scheduled arrival clock time, and

setting the local clock time of the second node to the first packet clock time;

performing a ranging method between the **first and second nodes** based on the local clock time exchanged, wherein the ranging method results in an estimated propagation delay between the **first and second node**, and wherein the ranging method comprises:

transmitting a second packet from the second node to the first node, wherein the second packet is transmitted from the second node at the scheduled arrival clock time, and wherein the second packet is received by the first node at an actual arrival clock time,

calculating and storing the estimated propagation delay at the first node, wherein calculating the estimated propagation delay is based on the scheduled arrival clock time and the actual arrival time, and

transmitting a third packet from the first node to the second node, wherein the third packet comprises the estimated propagation delay; and

adjusting the local clock time of either the first or second node based on the estimated propagation delay, **thereby resulting in a synchronized local clock time between the first and second node.**

193. At the time of the invention of the '681 Patent, it was not a routine, conventional, or well-known activity to “perform[] a ranging method between the first and second nodes based on the local clock time exchanged, wherein the ranging method results in an estimated propagation delay between the first and second node” involving “transmitting a second packet from the second node to the first node, wherein the second packet is transmitted from the second node at the scheduled arrival clock time, and wherein the second packet is received by the first node at an actual arrival clock time,” “calculating and storing the estimated propagation delay at the first node, wherein calculating the estimated propagation delay is based on the scheduled arrival clock time and the actual arrival time,” and “transmitting a third packet from the first node to the second node, wherein the third packet comprises the estimated propagation delay.”

194. At the time of the invention of the '681 Patent, it was not a routine, conventional, or well-known activity to “adjust[] the local clock time of either the first or second node based on the estimated propagation delay, thereby resulting in a synchronized local clock time between the first and second node.”

195. The invention of the '681 Patent enabled improvements to the efficiency of conventional coaxial networks that were not routine, conventional, or well-known. It achieved this innovation without requiring changes to the legacy coaxial cables and splitters that were already installed in millions of homes across the United States.

Conclusory allegations are insufficient



Trinity's amended complaint fails to adequately allege that the asserted claims contain inventive concepts such that they survive a § 101 motion. *See Simio*, 983 F.3d at 1365 (“We **disregard conclusory statements** when evaluating a complaint under Rule 12(b)(6).”).

Trinity Info Media, LLC v. Covalent, Inc., 72 F.4th 1355, 1365 (Fed. Cir. 2023)

These **conclusory allegations** that the prior art lacked elements of the asserted claims **are insufficient** to demonstrate an inventive concept. *See Simio*, 983 F.3d at 1365 (“A statement that a feature ‘improves the functioning and operations of the computer’ is, by itself, conclusory.”); *see also Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014) (“That some of the eleven steps were not previously employed in this art is not enough—standing alone—to confer patent eligibility upon the claims at issue.”).

Id. at 1365-66

Step 2 – Alleged Inventive Concept Is Untethered to the Claims

Entropic's Amended Complaint

1. A method for **synchronizing a plurality of nodes on a communication network**, comprising:

exchanging a local clock time between a first node and a second node over the communication network, wherein the exchange comprises:

transmitting a first packet from the **first node to the second node**, wherein the first packet includes a first packet clock time set to the local clock time of the first node at transmission time, and includes a scheduled arrival clock time, and

setting the local clock time of the second node to the first packet clock time;

performing a ranging method between the **first and second nodes** based on the local clock time exchanged, wherein the ranging method results in an estimated propagation delay between the **first and second node**, and wherein the ranging method comprises:

transmitting a second packet from the second node to the first node, wherein the second packet is transmitted from the second node at the scheduled arrival clock time, and wherein the second packet is received by the first node at an actual arrival clock time,

calculating and storing the estimated propagation delay at the first node, wherein calculating the estimated propagation delay is based on the scheduled arrival clock time and the actual arrival time, and

transmitting a third packet from the first node to the second node, wherein the third packet comprises the estimated propagation delay; and

adjusting the local clock time of either the first or second node based on the estimated propagation delay, **thereby resulting in a synchronized local clock time between the first and second node.**

191. Claim 1 of the '681 Patent recites an improvement in clock synchronization that solves a problem in estimating and accounting for propagation delay. The solution is directed to logical point-to-point networks, such as coaxial networks using MoCA technology, that require an estimate of propagation delay in a multipath environment where the propagation delay between two nodes is not known in advance, can vary dynamically based on changes in the channel path characteristics between them, and where the delay between two nodes in one direction can differ from the delay in the opposite direction.

192. At the time of the invention of the '681 Patent, it was not a routine, conventional, or well-known activity to exchange, on a conventional coaxial network, “a local clock time between a first node and a second node over the communication network” involving “transmitting a first packet from the first node to the second node, wherein the first packet includes a first packet clock time set to the local clock time of the first node at transmission time, and includes a scheduled arrival clock time” and “setting the local clock time of the second node to the first packet clock time.”

1. A method for synchronizing a plurality of nodes on a communication network, comprising:

exchanging a local clock time between a first node and a second node over the communication network, wherein the exchange comprises:

transmitting a first packet from the first node to the second node, wherein the first packet includes a first packet clock time set to the local clock time of the first node at transmission time, and includes a scheduled arrival clock time, and

setting the local clock time of the second node to the first packet clock time;

performing a ranging method between the first and second nodes based on the local clock time exchanged, wherein the ranging method results in an estimated propagation delay between the first and second node, and wherein the ranging method comprises:

transmitting a second packet from the second node to the first node, wherein the second packet is transmitted from the second node at the scheduled arrival clock time, and wherein the second packet is received by the first node at an actual arrival clock time,

calculating and storing the estimated propagation delay at the first node, wherein calculating the estimated propagation delay is based on the scheduled arrival clock time and the actual arrival time, and

transmitting a third packet from the first node to the second node, wherein the third packet comprises the estimated propagation delay; and

adjusting the local clock time of either the first or second node based on the estimated propagation delay, thereby resulting in a synchronized local clock time between the first and second node.

U.S. Patent No. 7,889,759

BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

U.S. Patent No. 7,889,759

US007889759B2

(12) **United States Patent**
Monk et al.

(10) **Patent No.:** US 7,889,759 B2
(45) **Date of Patent:** Feb. 15, 2011

(54) **BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING**

(75) **Inventors:** Anton Monk, San Diego, CA (US); Brett Bernath, San Diego, CA (US); Yusuf Ozturk, San Diego, CA (US); Ron Porat, San Diego, CA (US)

(73) **Assignee:** Entropic Communications, Inc., San Diego, CA (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1921 days.

(21) **Appl. No.:** 10/889,975

(22) **Filed:** Jul. 12, 2004

(65) **Prior Publication Data**
US 2005/0114904 A1 May 26, 2005

Related U.S. Application Data

(63) Continuation-in-part of application No. 10/778,505, filed on Feb. 13, 2004, now abandoned, which is a continuation of application No. 09/910,412, filed on Jul. 21, 2001, now Pat. No. 7,594,249, and a continuation-in-part of application No. 10/922,834, filed on Dec. 18, 2002, now Pat. No. 7,295,518, which is a continuation of application No. 10/230,687, filed on Aug. 29, 2002, now abandoned.

(60) Provisional application No. 60/288,967, filed on May 4, 2001, provisional application No. 60/316,820, filed on Aug. 30, 2001, provisional application No. 60/363,420, filed on Mar. 12, 2002, provisional application No. 60/385,361, filed on Jan. 5, 2002.

23 Claims, 11 Drawing Sheets

(51) **Int. Cl.**
H04J 3/16 (2006.01)

(52) **U.S. CL.** 370/465; 370/252; 455/63.1

(58) **Field of Classification Search** 370/252, 370/253, 465; 455/61, 63.1, 67.11
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
2005/0031044 A1* 2/2005 Gubert et al. 375/259
2009/0270498 A1* 11/2009 Li et al. 370/229
2008/0228851 A1* 12/2009 Liang et al. 375/207
* cited by examiner

Primary Examiner—Ricky Ngo
Assistant Examiner—Pao Sinkantarakorn
(74) **Attorney, Agent, or Firm**—Druce W. Greenhaus

(57) **ABSTRACT**
A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN is disclosed. The BCN may include a transmitting node within the plurality of nodes where the transmitting node is capable of sending a probe signal to the plurality of nodes, and at least one receiving node within the plurality of nodes in signal communication with the transmitting node. The at least one receiving node is capable of transmitting a first response signal in response to receiving the probe signal. The first response signal includes a first bit-loading modulation scheme determined by the at least one receiving node. The transmitting node is further capable of determining the common bit-loading modulation scheme from the first response signal.

Title: Broadband cable network utilizing common bit-loading

Filing Date: July 12, 2004

Issue Date: February 15, 2011

Continuation-in-part of several patents/applications, including the '518 Patent

The '759 Patent is directed to the abstract idea of (i) analyzing and comparing data and (ii) determining a common bit-loading modulation scheme.

Step 1 – Claims are directed to the abstract idea

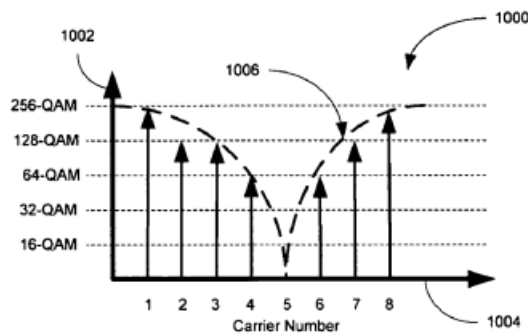


FIG. 10A

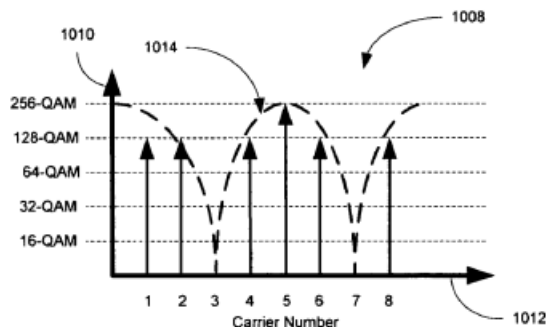


FIG. 10B

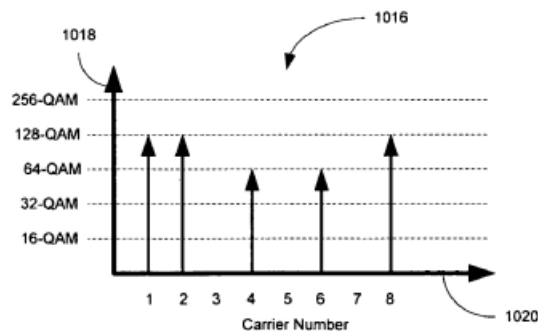


FIG. 10C

components in the cable network. Bit-loading is the process of optimizing the bit distribution to each of the channels to increase throughput. A bit-loading scheme is described in U.S. Utility application Ser. No. 10/322,834 titled "Broadband Network for Coaxial Cable Using Multi-carrier Modulation," filed Dec. 18, 2002, which is incorporated herein, in its entirety, by reference.

'759 Patent, 7:12-18

- The '759 Patent illustrates the how the prior art disclosed that different nodes can use different bit loading schemes (e.g. 16-QAM, 32-QAM, etc.) for different carriers
- Bit loading schemes effect the bit distribution on a channel

Step 1 – Claims are directed to the abstract idea

2. A method for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network (“BCN”), the method comprising:

transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node;

determining the common bit-loading modulation scheme from the received plurality of response signals;

receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

determining the transmission characteristics of the channel path at the one receiving node;

transmitting a response signal from the one receiving node to the transmitting node, wherein the transmission characteristics of the channel path are determined by measuring the bit-error rate (“BER”) characteristics of the received probe signal at the one receiving node and

generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path,

wherein **determining** a common bit-loading modulation scheme includes:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

Step 1 – Claims are directed to the abstract idea

2. A method for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network (“BCN”), the method comprising:

transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node;

determining the common bit-loading modulation scheme from the received plurality of response signals;

receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

determining the transmission characteristics of the channel path at the one receiving node;

transmitting a response signal from the one receiving node to the transmitting node, wherein the transmission characteristics of the channel path are **determined** by measuring the bit-error rate (“BER”) characteristics of the received probe signal at the one receiving node and

generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path,

wherein determining a common bit-loading modulation scheme includes:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

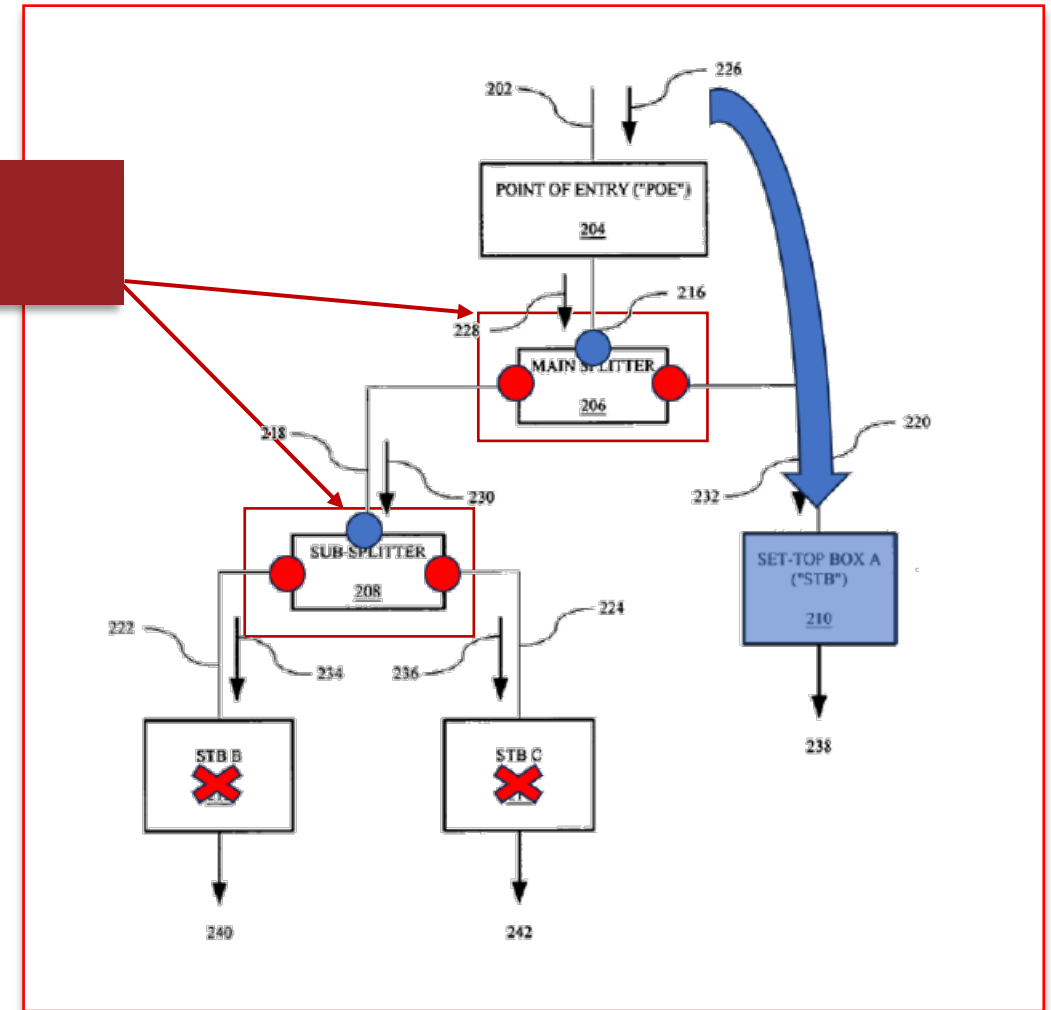
determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

Step 1 – Claims are directed to the abstract idea

Entropic alleges that the presence of a splitter in a coaxial network prevented peer-to-peer communications

different rooms. These splitters were specifically designed *not* to allow communications between user devices that were connected to different “branches” or “taps” of the splitter. ('518 Pat., 2:35–46.) For instance, the splitters impeded, or

Opp at 12.



Amended Complaint at ¶ 27 (annotated).

Step 1 – Claims are directed to the abstract idea

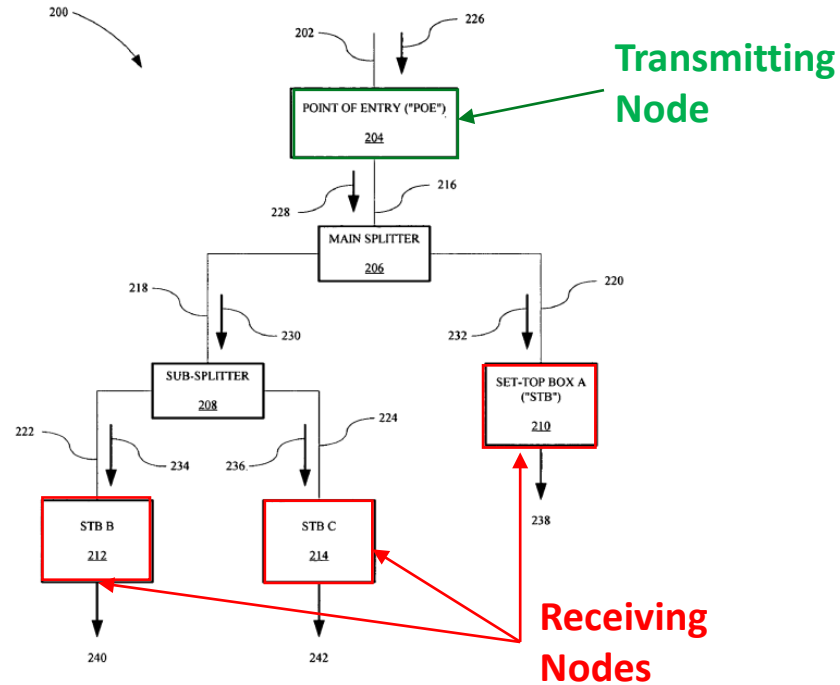


FIG. 2 (Prior Art)

- The claims could cover:
 - (i) prior art architectures that did not allow direct communication between multiple set top boxes, and
 - (ii) architectures that do not have a splitter (not pictured).

Step 1 – Claims are directed to the abstract idea

- The preamble is not limiting and thus the claim does not require a cable network.
- Even if the preamble is limiting, the claims do not require peer-to-peer communication or a splitter.
- Claim is directed to the idea of analyzing transmissions to determine a common bit loading scheme, not *how* to do it.
- There is no requirement in the claims that the common bit-loading scheme be used for transmissions.

2. A method for **determining a common bit-loading modulation scheme** for communicating between a plurality of nodes in a broadband cable network ("BCN"), the method comprising:

transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node;

determining the common bit-loading modulation scheme from the received plurality of response signals;

receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

determining the transmission characteristics of the channel path at the one receiving node;

transmitting a response signal from the one receiving node to the transmitting node, wherein the transmission characteristics of the channel path are determined by measuring the bit-error rate ("BER") characteristics of the received probe signal at the one receiving node and

generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path,

wherein **determining a common bit-loading modulation scheme** includes:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

Step 1 – Claims are directed to the abstract idea

- The claims do not require broadcasting, multicasting, simultaneously transmitting in an environment with multiple unknown pathways.
- The prior art already allowed simultaneous transmission from a transmitting head node to a plurality of receiving nodes.

Entropic's Opposition

The basic character of claim 2 of the '759 Patent is enabling broadcast communication in a specific environment (broadband cable networks) with variable and unknown pathways between multiple devices. As argued above in Section III and IV.a, the Federal Circuit has repeatedly held that improvements to how networks operate are patentable inventions. *See, e.g., Packet Intel.*, 965 F.3d at 1309; *Mentone*, 2021 WL 5291802, at *5–6. And like claim 1 of the '518 Patent, claim 2 of the '759 Patent is another example of such a patentable improvement.

work for the other. The specification explains that a common bit-loaded scheme is determined by comparing carrier signal values of the two paths and “choosing the lowest corresponding modulation value for each carrier number.” (*Id.*, 10:41–57, Fig. 11C.) The use of this scheme, as claimed, allows the transmitter to transmit information to “node B and node C simultaneously,” which was not previously possible. (*Id.*, 10:56–57.) Claim 2 is directed to a specific improvement to communication in cable installations and is thus patent-eligible. *See, e.g., Packet Intel.*, 965 F.3d at 1309; *Mentone*, 2021 WL 5291802, at *5–6.

Step 2 - Conclusory allegations are insufficient



Trinity's amended complaint fails to adequately allege that the asserted claims contain inventive concepts such that they survive a § 101 motion. *See Simio*, 983 F.3d at 1365 (“We **disregard conclusory statements** when evaluating a complaint under Rule 12(b)(6).”).

Trinity Info Media, LLC v. Covalent, Inc., 72 F.4th 1355, 1365 (Fed. Cir. 2023)

Conclusory Allegations in Entropic's Amended Complaint

94. At the time of the invention of the '759 Patent, it was not routine, conventional, or well-known in the art for devices connected to a conventional broadband cable network in the home or other premises to operate as nodes that could send data to, and receive data from, other nodes on that network.

95. At the time of the invention of the '759 Patent, it was not routine, conventional, or well-known in the art for a device connected to a conventional broadband cable network to send probes to, or receive probes from another device on that network.

Step 2 – The claim does not recite unconventional activity

'759 and '518 Patents admit that claimed features were known in the art

- Bit loading was known

of the constellation points. Frequencies with the lower SNR use lower order constellations such as QPSK. U.S. Pat. No. 6,438,174 "Multi-carrier transmission systems" incorporated herein by reference, discloses discrete multi-tone modulation and a technique for bit loading applied to point-to-point twisted pair wiring. U.S. Pat. No. 6,259,746 "Method for allocating data and power in a discrete multi-tone communication system" discloses a technique for bit loading applied to discrete multi-tone modulation.

'518 Patent, 8:18-26.

- Use of known signals, like probe signals, to determine channel response and characteristics was known

generated. Determination of a channel response, multipath, and SNR profile from a known signal is well known in the art. The data pattern chosen for the preamble and training

'518 Patent, 10:12-14.

- Forming known signals, like probe signals, to use for synchronizing receivers was known

Schmidl, et al. "Robust Frequency and Timing Synchronization for OFDM", IEEE Transactions on Communications, vol. 45, No. 12, pp. 1613-1621 (1997) and Minn, et al. "On Timing Offset Estimation for OFDM Systems", IEEE Communications Letters, Vol. 4, No. 7, pp. 242-244, incorporated herein by reference, describe techniques for forming and processing sequences to synchronize receivers to data transmissions over frequency-selective channels.

'518 Patent, 10:21-28

U.S. Patent No. 7,295,518

BROADBAND NETWORK FOR COAXIAL CABLE USING MULTI-CARRIER
MODULATION

Step 1 – Claims are directed to an abstract idea

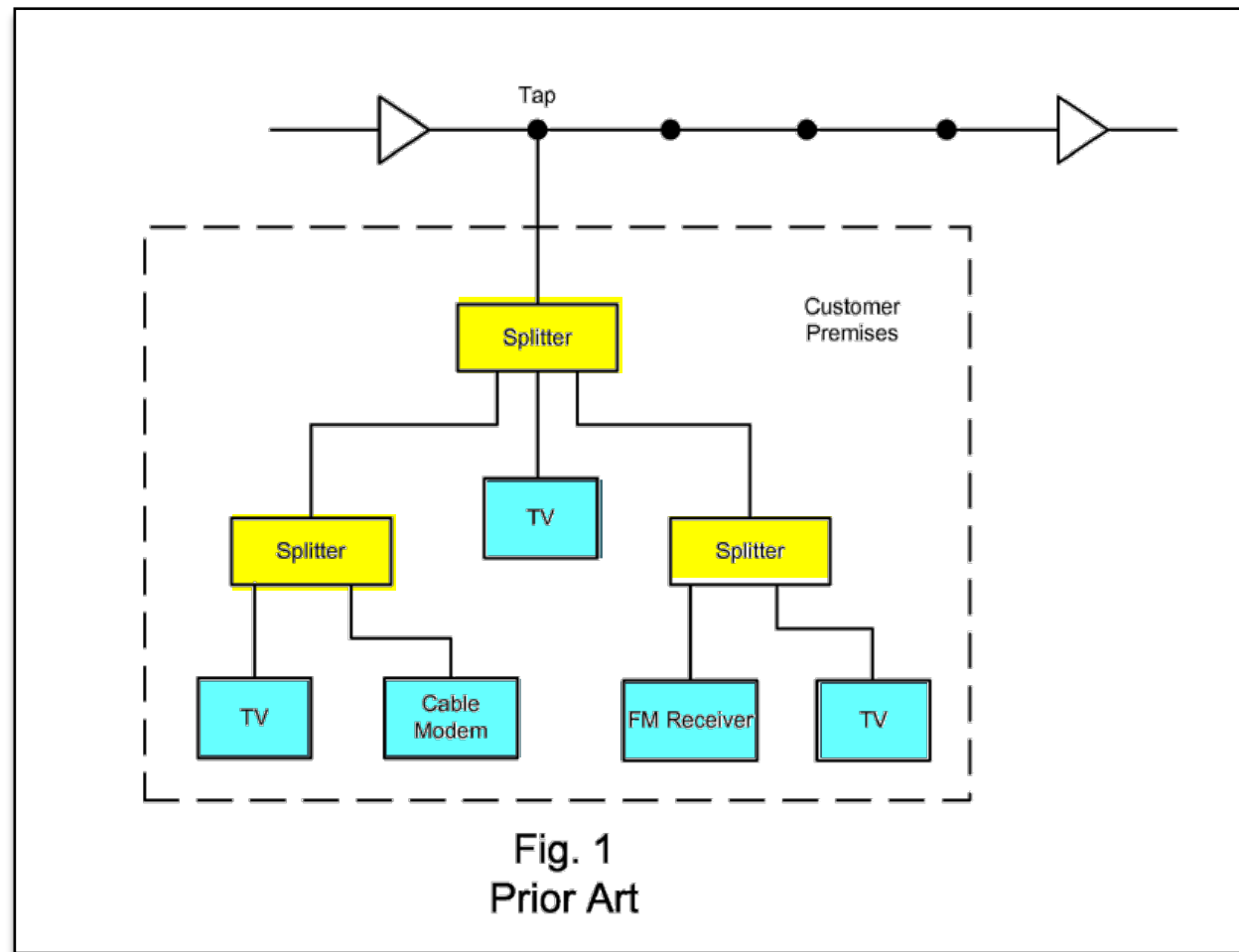
1. A data communication network comprising:

at least two network devices, each network device comprising a multi-carrier modulator for modulating data, an up converter for translating the modulated data to an RF carrier frequency, a down converter for translating an RF signal, and a multi-carrier demodulator for demodulating the translated RF signal to produce data; and

cable wiring comprising a splitter with a common port and a plurality of tap ports, and a plurality of segments of coaxial cable connecting between the splitter tap ports and the network devices;

whereby network devices communicate with each other through the cable wiring using multi-carrier signaling;

wherein network devices transmit probe messages through the cable wiring and analyze received probe message signals to determine channel characteristics and bit loading is selected based on the determined channel characteristics.



Step 1 – Claims are directed to an abstract idea

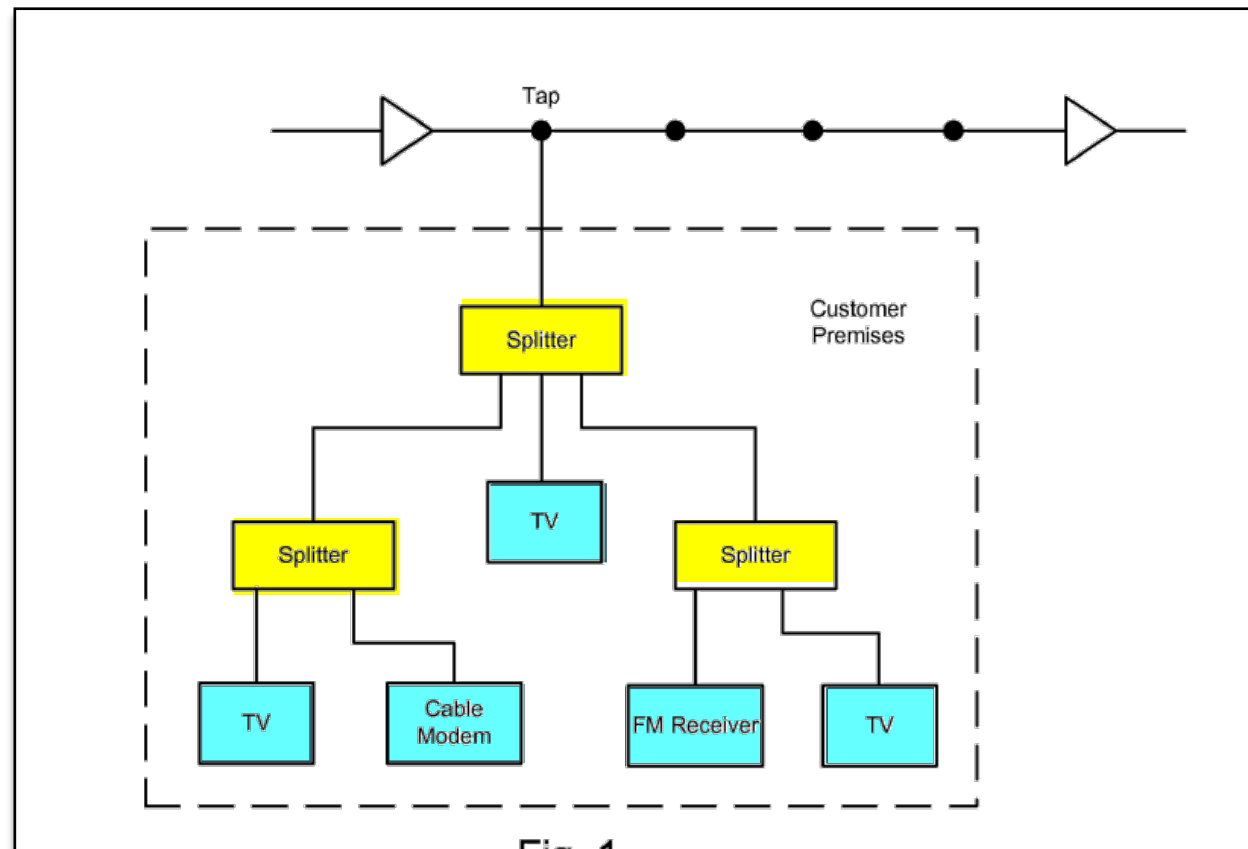
1. A data communication network comprising:

at least two network devices, each network device comprising a multi-carrier modulator for modulating data, an up converter for translating the modulated data to an RF carrier frequency, a down converter for translating an RF signal, and a multi-carrier demodulator for demodulating the translated RF signal to produce data; and

cable wiring comprising a splitter with a common port and a plurality of tap ports, and a plurality of segments of coaxial cable connecting between the splitter tap ports and the network devices;

whereby network devices **communicate with each other through the cable wiring using multi-carrier signaling;**

wherein **network devices transmit probe messages through the cable wiring and analyze received probe message signals to determine channel characteristics and bit loading is selected based on the determined channel characteristics.**



The '518 Patent is directed to the abstract idea of
(i) **transmitting and analyzing information,** and
(ii) **determining a bit loading scheme.**

A particular technological environment does not save a claim

1. A data communication network comprising:

at least two network devices, each network device comprising a multi-carrier modulator for modulating data, an up converter for translating the modulated data to an RF carrier frequency, a down converter for translating an RF signal, and a multi-carrier demodulator for demodulating the translated RF signal to produce data; and

cable wiring comprising a splitter with a common port and a plurality of tap ports, and a plurality of segments of coaxial cable connecting between the splitter tap ports and the network devices;

whereby network devices communicate with each other through the cable wiring using multi-carrier signaling;

wherein network devices transmit probe messages through the cable wiring and analyze received probe message signals to determine channel characteristics and bit loading is selected based on the determined channel characteristics.

“[M]erely limiting the field of use of the abstract idea to a particular existing technological environment does not render the claims any less abstract.”

Affinity Labs of Tex. v. DIRECTV, LLC, 838 F.3d 1253, 1259 (Fed. Cir. 2016)

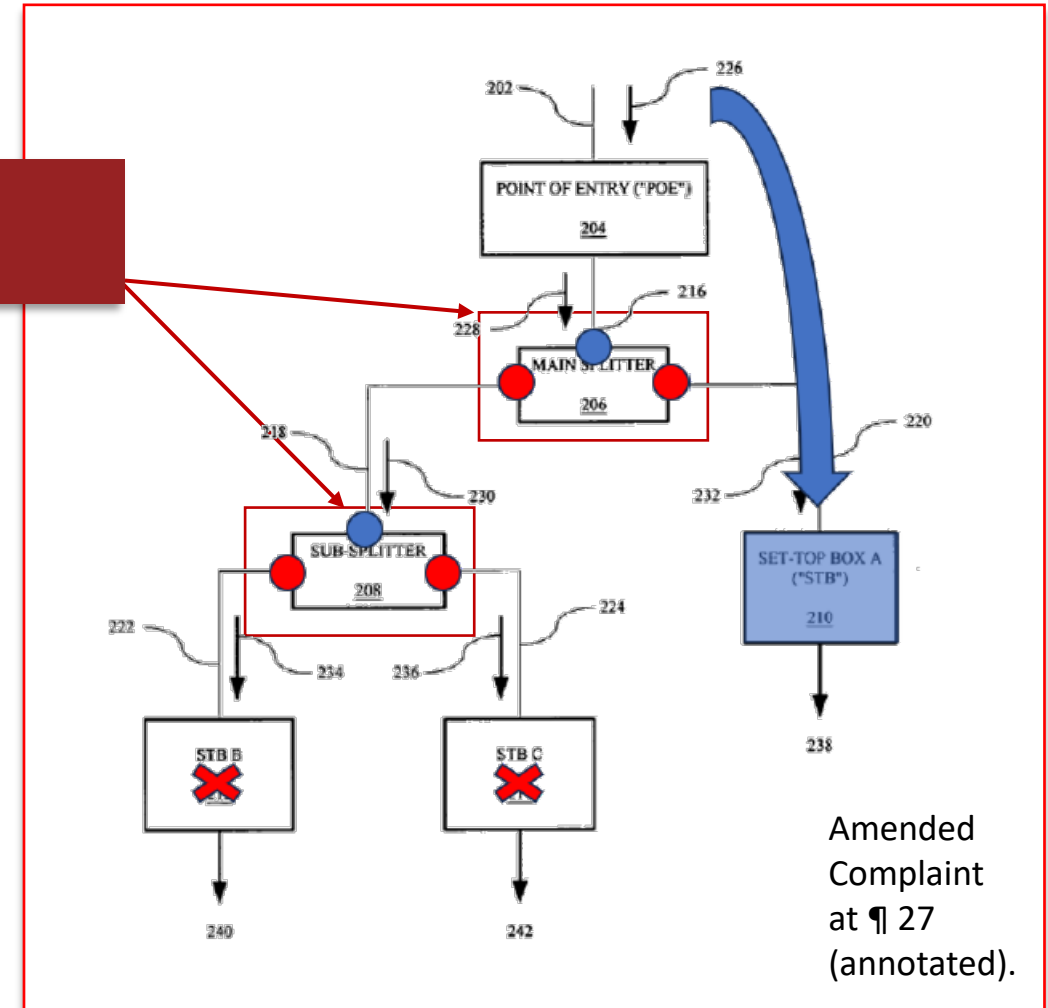
The claims merely propose the use of the abstract idea in a coaxial cable network with a splitter.

Step 1 – Claims are directed to an abstract idea

Entropic alleges that the presence of a splitter in a coaxial network prevented peer-to-peer communications

different rooms. These splitters were specifically designed *not* to allow communications between user devices that were connected to different “branches” or “taps” of the splitter. ('518 Pat., 2:35–46.) For instance, the splitters impeded, or

Opp at 12.



Amended
Complaint
at ¶ 27
(annotated).

Step 1 – Claims are directed to an abstract idea

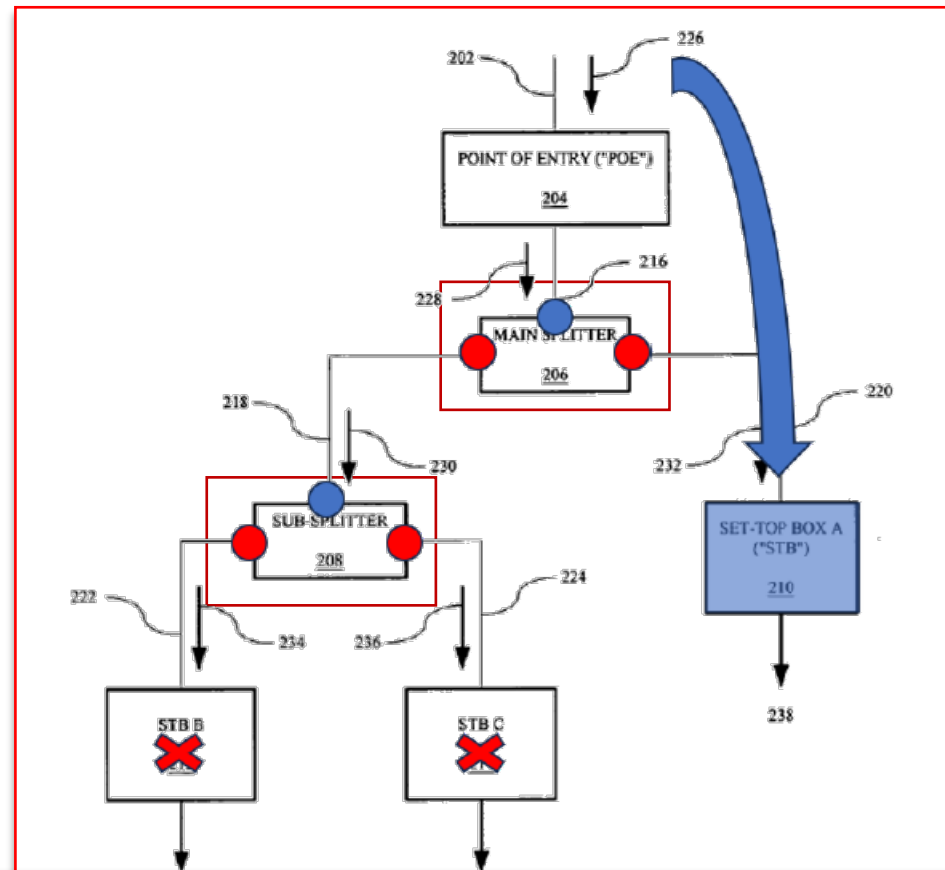
1. A data communication network comprising:

at least two network devices, each network device comprising a multi-carrier modulator for modulating data, an up converter for translating the modulated data to an RF carrier frequency, a down converter for translating an RF signal, and a multi-carrier demodulator for demodulating the translated RF signal to produce data; and

cable wiring comprising a splitter with a common port and a plurality of tap ports, and a plurality of segments of coaxial cable connecting between the splitter tap ports and the network devices;

whereby network devices communicate with each other through the cable wiring using multi-carrier signaling;

wherein network devices transmit probe messages through the cable wiring and analyze received probe message signals to determine channel characteristics and bit loading is selected based on the determined channel characteristics.



Amended
Complaint
at ¶ 27
(annotated).

Contrary to Entropic's arguments, the claims do not resolve the splitter problem. The claims use any splitter, including a conventional splitter.

Step 1 – Claims are directed to an abstract idea

Entropic's Opposition

19 for applying bit loading to a network.” (Mot. at 25.) The factual allegations in
20 Entropic’s First Amended Complaint—which must be taken as true—show that bit
21 loading had never before been applied to communication between user devices on a
22 coaxial network. (FAC, ¶¶ 75–78.) Thus, the ’518 Patent recites and teaches an

Opp at 14.

- Entropic’s arguments are untethered to the claims.
- The claims do not require applying bit loading to communication between user devices in a coaxial network.

Step 1 – Claims are directed to an abstract idea

1. A data communication network comprising:

at least two network devices, each network device comprising a multi-carrier modulator for modulating data, an up converter for translating the modulated data to an RF carrier frequency, a down converter for translating an RF signal, and a multi-carrier demodulator for demodulating the translated RF signal to produce data; and

cable wiring comprising a splitter with a common port and a plurality of tap ports, and a plurality of segments of coaxial cable connecting between the splitter tap ports and the network devices;

whereby network devices **communicate with each other through the cable wiring using multi-carrier signaling;**

wherein **network devices transmit probe messages through the cable wiring and analyze received probe message signals to determine channel characteristics and bit loading is selected based on the determined channel characteristics.**

Step 2 – The claim does not recite unconventional activity

- OFDM communication / multicarrier signaling in coaxial networks were known.

U.S. Pat. No. 6,091,932 “Bidirectional point to multipoint network using multicarrier modulation”, incorporated herein by reference, discloses various techniques for implementing OFDM communication. This reference discloses the use of OFDM for communicating between a terminal device and the cable head-end.

'518 Patent, 3:56-61.

- Multicarrier signaling with bit loading was known.

of the constellation points. Frequencies with the lower SNR use lower order constellations such as QPSK. U.S. Pat. No. 6,438,174 “Multi-carrier transmission systems” incorporated herein by reference, discloses discrete multi-tone modulation and a technique for bit loading applied to point-to-point twisted pair wiring. U.S. Pat. No. 6,259,746 “Method for allocating data and power in a discrete multi-tone communication system” discloses a technique for bit loading applied to discrete multi-tone modulation.

'518 Patent, 8:18-26.

- Multicarrier signaling architectures were known.

Multi-carrier system architecture is covered in *ADSL/VDSL Principles* by DR. Dennis J. Rauchmayer, Macmillan Technical Publishing, 1999 and *DSL Simulation Techniques and Standards Development for Digital Subscriber Line Systems* by Dr. Walter Y. Chen, Macmillan Technology Publishing, 1998, incorporated herein by reference.

'518 Patent, 9:28-33

Step 2 – The claim does not recite unconventional activity

- Use of known signals, like probe messages, to determine channel response and characteristics was known

generated. Determination of a channel response, multipath, and SNR profile from a known signal is well known in the art. The data pattern chosen for the preamble and training

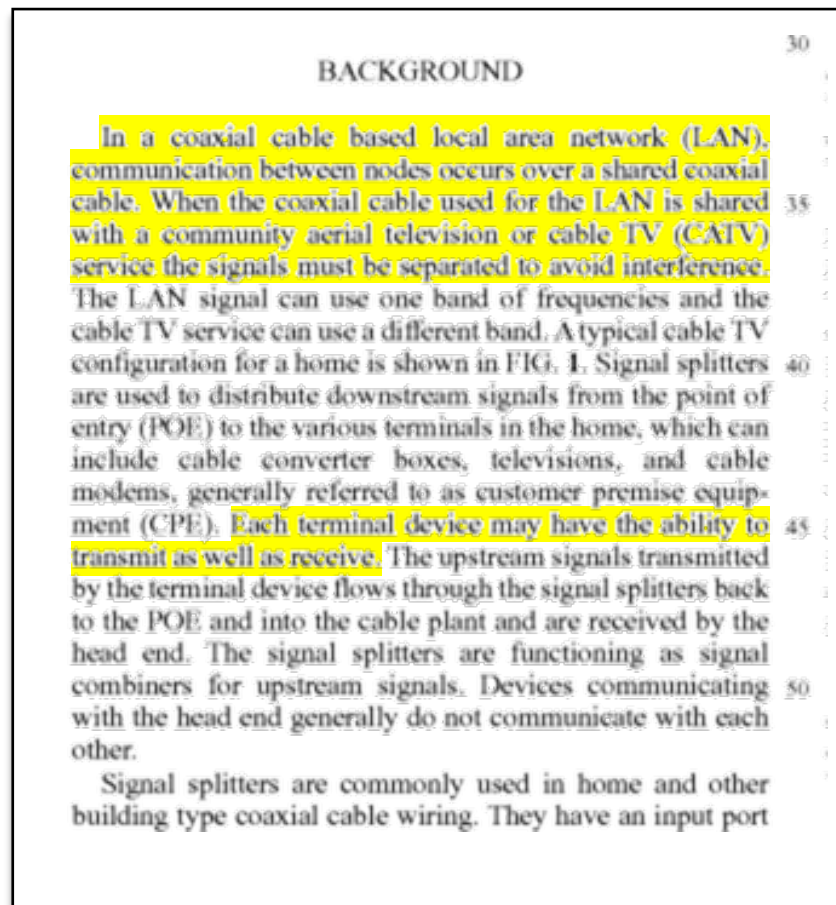
'518 Patent, 10:12-14.

- Forming known signals, like probe messages, to use for synchronizing receivers was known

Schmidl, et al. "Robust Frequency and Timing Synchronization for OFDM", IEEE Transactions on Communications, vol. 45, No. 12, pp. 1613-1621 (1997) and Minn, et al. "On Timing Offset Estimation for OFDM Systems", IEEE Communications Letters, Vol. 4, No. 7, pp. 242-244, incorporated herein by reference, describe techniques for forming and processing sequences to synchronize receivers to data transmissions over frequency-selective channels.

'518 Patent, 10:21-28

Step 2 – The claim does not recite unconventional activity




'518 Patent at 1:33-55.

U.S. Patent No. 8,621,539

PHYSICAL LAYER TRANSMITTER FOR USE IN A BROADBAND LOCAL
AREA NETWORK

U.S. Patent No. 8,621,539



US008621539B1

(12) **United States Patent**
Monk et al.

(10) Patent No.: **US 8,621,539 B1**
(45) Date of Patent: **Dec. 31, 2013**

(54) **PHYSICAL LAYER TRANSMITTER FOR USE IN A BROADBAND LOCAL AREA NETWORK**

(75) Inventors: **Anton Monk**, Del Mar, CA (US); **Ron Perat**, La Jolla, CA (US); **Woo Peng Goh**, Temecula, CA (US); **Magnus Berggren**, San Diego, CA (US); **Ron Lee**, San Diego, CA (US); **Edward Warner**, San Diego, CA (US); **Brett Bernath**, San Diego, CA (US); **Yusuf Ozturk**, San Diego, CA (US)

(73) Assignee: **Entropic Communications, Inc.**, San Diego, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1010 days.

(21) Appl. No.: **11/241,748**

(22) Filed: **Sep. 29, 2005**

Related U.S. Application Data

(60) Provisional application No. 60/633,091, filed on Dec. 2, 2004, provisional application No. 60/632,797, filed on Dec. 2, 2004, provisional application No. 60/633,002, filed on Dec. 2, 2004, provisional application No. 60/632,856, filed on Dec. 2, 2004.

(51) **Int. Cl.**
H04N 7/173 (2011.01)

(52) **U.S. Cl.**
USPC: **725/111; 725/123; 725/126; 725/127**

(58) **Field of Classification Search**
None
See application file for complete search history.

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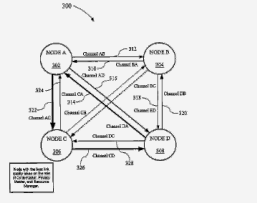
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Primary Examiner—Cai Chen
(74) *Attorney, Agent, or Firm*—Bruce Greenhaus; Richard Buchand; Diana Morris LLP

(57) **ABSTRACT**

A physical layer transmitter that communicates between nodes in a broadband cable network by transmitting and receiving packets containing data and control information. Packets are constructed by the physical layer transmitter and transmitted to one or more receiving nodes that are capable of processing the packets. Packets are directed to specific nodes utilizing link layer control data. The packets may also contain control information that may include formatting, encoding and modulation parameters that are capable of being processed by the appropriate receiving nodes. The physical layer transmitter allows node-to-node communication within a broadband cable network and each node in the network is capable of communicating with every other node in the network.

7 Claims, 25 Drawing Sheets



Title: Physical layer transmitter for use in a broadband local area network

Filing Date: September 29, 2005

Issue Date: December 13, 2013

The '539 Patent is directed to the abstract idea of transmitting information and measuring and adjusting parameters.

Step 1 – Claims are directed to an abstract idea

1. A modem for communication to at least one node across at least one channel of a coaxial network, the modem comprising:

a **transmitter**;

and **a MAC layer** in signal communication with the transmitter, the MAC layer **using at least one probe packet as an echo profile probe to measure node delay spread on the network** and the MAC layer **optimizing the preamble and cyclic prefix requirements or other parameters in response to the measured node delay spread on the network**;

wherein the **transmitter communicates** the at least one [probe] packet.

The '539 Patent is directed to the abstract idea of transmitting information and measuring and adjusting parameters.

Measuring parameters

Adjusting parameters

Transmitting

Step 1 – Claims are directed to an abstract idea

1. A modem for communication to at least one node across at least one channel of a coaxial network, the modem comprising:

a **transmitter**;

and **a MAC layer** in signal communication with the transmitter, the MAC layer **using at least one probe packet as an echo profile probe to measure node delay spread on the network** and the MAC layer **optimizing the preamble and cyclic prefix requirements or other parameters in response to the measured node delay spread on the network**;

wherein the **transmitter communicates** the at least one [probe] packet.

Entropic's arguments fail:

- The claims do not require a coaxial network because the preamble is not limiting
- Claims do not require probe packets to be sent between peer devices as the claims are only directed to a single modem
- No requirement of how to measure node delay spread or optimize parameters

Step 1 – Claims are directed to an abstract idea

1. A modem for communication to at least one node across at least one channel of a coaxial network, the modem comprising:

a **transmitter**;

and a **MAC layer** in signal communication with the transmitter, the MAC layer **using at least one probe packet as an echo profile probe to measure node delay spread on the network** and the MAC layer **optimizing the preamble and cyclic prefix requirements or other parameters in response to the measured node delay spread on the network**;

wherein the **transmitter communicates** the at least one [probe] packet.

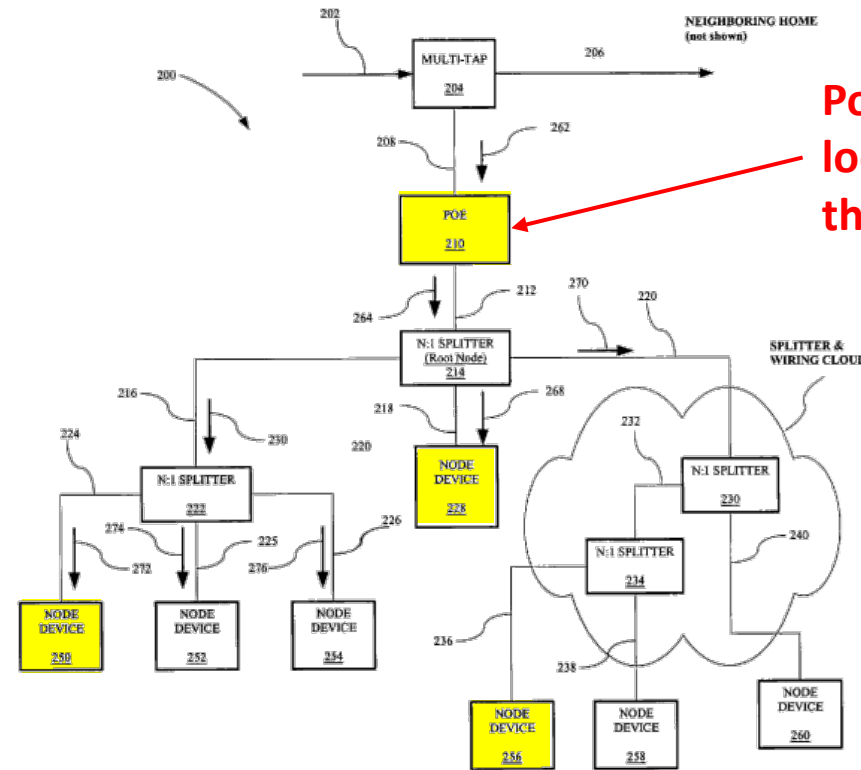


FIG. 2 (Prior Art)

Step 1 – Claims are directed to an abstract idea

Presently many CPEs utilized in modern cable and DBS systems, however, have the ability to transmit as well as receive. If a CPE is capable of transmitting an upstream signal, the transmitted upstream signal from that CPE typically flows through the signal splitters back to the POE and to the cable and/or DBS provider. In this reverse flow direction, the signal splitters function as signal combiners for upstream signals from the CPEs to the POE. Usually, most of the energy

'539 Patent at 4:6-13

Step 1 – Claims are directed to an abstract idea

1. A modem for communication to at least one node across at least one channel of a coaxial network, the modem comprising:

a transmitter;

and a MAC layer in signal communication with the transmitter, the MAC layer using at least one probe packet as an echo profile probe to measure node delay spread ¹ on the network and the MAC layer optimizing the preamble and cyclic prefix requirements or other parameters in response to the measured node ² delay spread on the network;

wherein the transmitter communicates the at least one [probe] packet.

- Entropic also mischaracterizes the claims as *requiring* optimizing the cyclic prefix.
- The claims require optimizing:
 1. The preamble and cyclic prefix requirements
 - OR
 2. Other parameters
- The claims also do not require any specific optimization and are thus merely directed to the idea of adjusting parameters

Step 2 – The claim does not recite unconventional activity



Trinity's amended complaint fails to adequately allege that the asserted claims contain inventive concepts such that they survive a § 101 motion. *See Simio*, 983 F.3d at 1365 (“We **disregard conclusory statements** when evaluating a complaint under Rule 12(b)(6).”).

Trinity Info Media, LLC v. Covalent, Inc., 72 F.4th 1355, 1365 (Fed. Cir. 2023)

131. At the time of the invention of the '539 Patent, it was not routine, conventional, or well-known in the art for modems connected to a conventional broadband cable network to communicate with another.

132. At the time of the invention of the '539 Patent, it was not routine, conventional, or well-known in the art for modems connected to a conventional broadband cable network to transmit probe packets, let alone for the specific purpose of measuring node delay spread on the network.

133. The element of “a MAC layer in signal communication with the transmitter, the MAC layer using at least one probe packet as an echo profile probe to measure node delay spread on the network” recites a technological capability that was not routine or conventional in existing on-premises coaxial networks as of the priority date of the '539 Patent for the reasons explained in Paragraphs 11 to 38 above.

134. The element of “the MAC layer optimizing the preamble and cyclic prefix requirements or other parameters in response to the measured node delay spread on the network” recites a technological capability that was not routine or conventional in existing on-premises coaxial networks as of the priority date of the '539 Patent for the reasons explained in Paragraphs 11 to 38 above.

Step 2 – The claim does not recite unconventional activity

1. A modem for communication to at least one node across at least one channel **of a coaxial network**, the modem comprising:

a transmitter;

and a MAC layer in signal communication with the transmitter, the MAC layer using at least one probe packet as an **echo profile probe to measure node delay spread** on the network and the MAC layer optimizing the preamble and cyclic prefix requirements or other parameters in response to the measured node delay spread on the network;

wherein the transmitter communicates the at least one [probe] packet.

- The preamble is not limiting and thus does not require coaxial network.
- No disclosure in the claims or the specification of how the echo profile probe is created or how it is used to measure node delay spread

Step 2 – The claim does not recite unconventional activity

- Use of known signals, like probe messages, to determine channel response and characteristics was known

generated. Determination of a channel response, multipath, and SNR profile from a known signal is well known in the art. The data pattern chosen for the preamble and training

'518 Patent, 10:12-14.

- Forming known signals, like probe messages, to use for synchronizing receivers was known

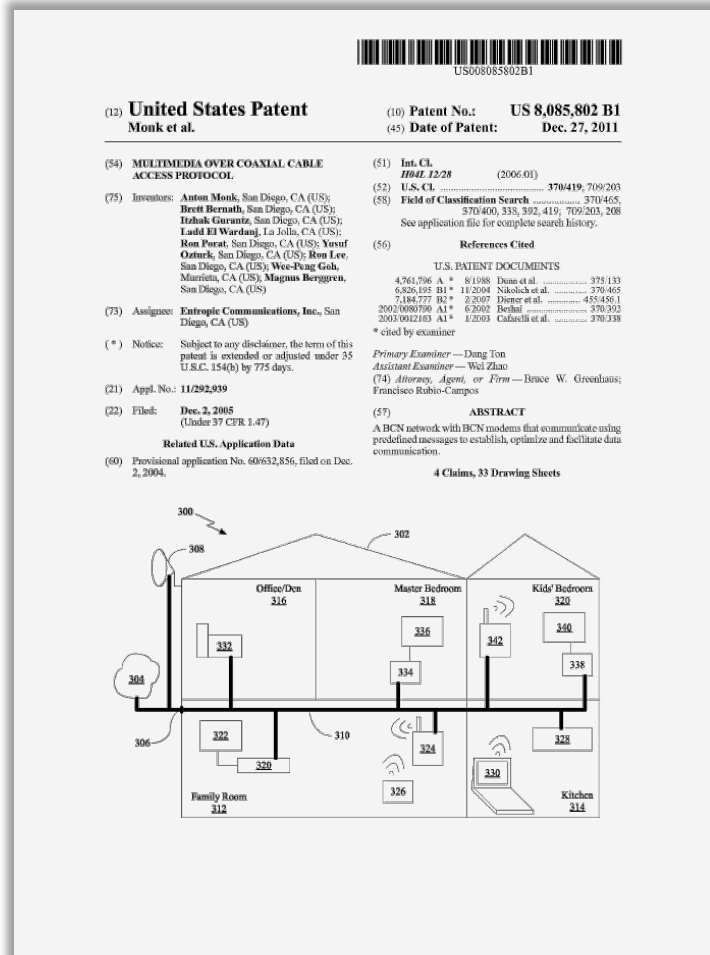
Schmidl, et al. "Robust Frequency and Timing Synchronization for OFDM", IEEE Transactions on Communications, vol. 45, No. 12, pp. 1613-1621 (1997) and Minn, et al. "On Timing Offset Estimation for OFDM Systems", IEEE Communications Letters, Vol. 4, No. 7, pp. 242-244, incorporated herein by reference, describe techniques for forming and processing sequences to synchronize receivers to data transmissions over frequency-selective channels.

'518 Patent, 10:21-28

U.S. Patent No. 8,085,802

MULTIMEDIA OVER COAXIAL CABLE ACCESS PROTOCOL

U.S. Patent No. 8,085,802



Title: Multimedia over coaxial cable access protocol

Filing Date: December 2, 2005

Issue Date: December 27, 2011

The '802 Patent is directed to the abstract idea of transmitting information containing specific fields.

Step 1 – Claims are directed to an abstract idea

3. A method for transmitting packets from a Broadband Cable Network (BCN) modem to a plurality of nodes in a broadband cable network, the method comprising:

formatting the packets in a MAC subsystem that transmits the packets within the broadband cable network, including formatting a data and control packet for transmission within the broadband cable network, the data and control packet having a header and a variable length payload, the header having at least five fields selected from the group consisting of a transmit clock field, packet type field, packet subtype field, version field, source node ID field, destination node ID field, and header check sequence field;

receiving the packets from the MAC subsystem at a Modem subsystem that is in signal communication with the MAC subsystem and that appends information to the packets; and

upconverting the packets with the information for transmission via the broadband cable network at a RF subsystem that is in signal communication with the Modem subsystem;

wherein at least one of the packets is a beacon packet that has a channel number field, change field, sequence number field, network coordinator ID field, next beacon index field, admission frame length field, admission window, asynchronous MAP length field and a beacon Cyclic Redundancy Checking (CRC) field.

The '802 Patent is directed to the abstract idea of transmitting information containing specific fields.

Step 2 – The claim does not require peer-to-peer communication

- Entropic argues that the claim is not abstract because it is directed to a specific improvement to broadband cable networks that allows transmission of signals between nodes.
- The claims, however, do not require peer-to-peer communication
- The claims do not require a specific frequency that is higher than ranges used by satellite

Entropic's Opposition

1 *First*, upconverting and transmitting packets from a BCN modem to multiple
 2 node devices in a broadband cable network was not routine or conventional. (FAC,
 3 ¶¶ 101, 103–106, 111.) Because it was the “conventional wisdom” at the time that
 4 the structure of cable installations “prevented devices . . . from communicating with
 5 one another,” the transmission of packets between end devices was unconventional,
 6 particularly to multiple receiving nodes. (*Id.*, ¶¶ 23, ¶ 25.) Further, because the

Amended Complaint

Opp. at 34

3 111. The element of “upconverting the packets with the information for
 4 transmission via the broadband cable network at a RF subsystem that is in signal
 5 communication with the Modem subsystem” recites a technological capability that
 6 was not routine or conventional as of the priority date of the '802 Patent. As of that
 7 date, upconverting packets so that the transmitted data is carried on RF signals at
 8 frequencies higher than the range typically used by cable TV was not a routine or
 9 well-known activity because as explained in Paragraphs 11 to 38 above, packet
 10 communications between network devices on a home coaxial network was not
 11 routine or well-known.

Step 2 – The claim does not recite an inventive concept

3. A method for transmitting packets from a Broadband Cable Network (BCN) modem to a plurality of nodes in a broadband cable network, the method comprising:

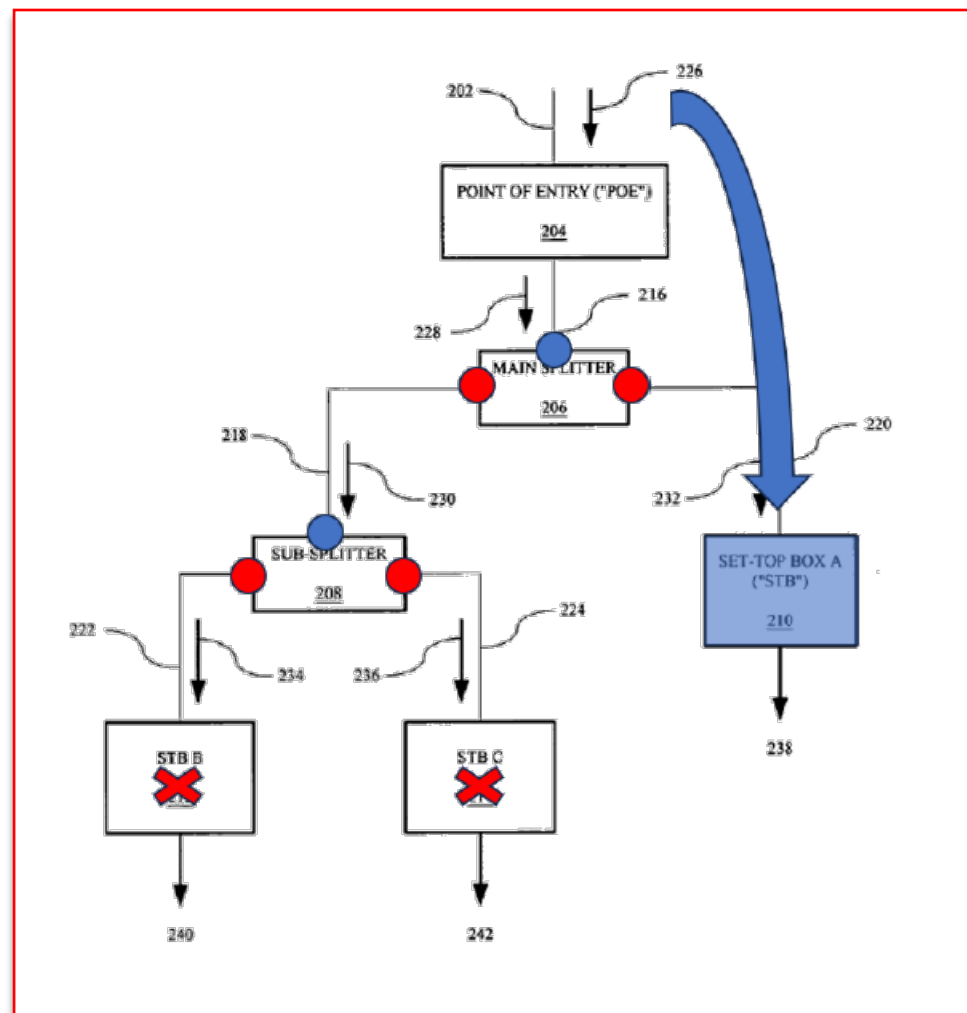
formatting the packets in a MAC subsystem that transmits the packets within the broadband cable network, including formatting a data and control packet for transmission within the broadband cable network, the data and control packet having a header and a variable length payload, the header having at least five fields selected from the group consisting of a transmit clock field, packet type field, packet subtype field, version field, source node ID field, destination node ID field, and header check sequence field;

receiving the packets from the MAC subsystem at a Modem subsystem that is in signal communication with the MAC subsystem and that appends information to the packets; and

upconverting the packets with the information for transmission via the broadband cable network at a RF subsystem that is in signal communication with the Modem subsystem;

wherein at least one of the packets is a beacon packet that has a channel number field, change field, sequence number field, network coordinator ID field, next beacon index field, admission frame length field, admission window, asynchronous MAP length field and a beacon Cyclic Redundancy Checking (CRC) field.

- The claims cover the method being performed at the POE and thus Entropic's arguments regarding peer-to-peer are irrelevant
- The claims also do not require a splitter



Amended Complaint at ¶ 27 (annotated).

Step 2 – The claim does not require peer-to-peer communication

102. In particular, claim 3 of the '802 Patent recites use of a “source node ID field,” “destination node ID field,” and a “network coordinator ID field.” Each of these fields are unique to the node-to-node communication recited in claim 3 of the '802 Patent, and which are used to achieve the technological advance in broadband cable networking that enabled communication between devices on the network.

Amended Complaint at ¶ 102.

Entropic's arguments that specific elements were not conventional are conclusory and thus not entitled to any weight.

Step 2 – The claim does not recite an inventive concept

In order to manage the BCN network, and control and optimize its operation and enable efficient data transmission in the network, several types of data packets may be used to transmit information. The three most prevalent packet types, for example, are robust packets, probe packets and data transfer packets. The robust packet's main characteristics are that it can be received by any BCN modem in the network even before channels are optimized. The robust packets contain significant redundancy and are transmitted using lower order modulation. The robust packet type is used mainly to broadcast information to all nodes in the BCN network 310 and to enable communications between them before the network is optimized, or to communicate most important control and timing information. One of the robust packets may be called a beacon that may be sent at anytime, no matter the quality of the link, to provide the basic timing and control information that may be required for robust network operation. The robust packets may also transfer original contention and admission information. Another type of robust packet may be used for influencing hardware, i.e., a global reset of all BCN modems in the BCN network 310.

'802 Patent at 9:31-51.

Nikolich et al., the prior art disclosed in Nikolich et al., and Dunn et al. teach all the subject matter with the exception of implementing the method, wherein at least one of the packets is a beacon packet that has a channel number field, change field, sequence number field, network coordinator ID field, next beacon index field, admission frame length field, admission window, asynchronous MAP length field and a beacon CRC field. Cafarelli et al. from the same or similar field of endeavor teach implementing fairness of the method, wherein at least one of the packets is a beacon packet that has a channel number field, change field, sequence number field, network coordinator ID field, next beacon index field, admission frame length field, admission window, asynchronous MAP length field and a beacon CRC field (paragraph [0053] lines 1-4).

'802 Patent, Prosecution History (Aug. 3, 2010 Non-Final Rejection) at 5.

Use of a beacon packet also was well known in the art.

Chamberlain Grp v. Techtronic Indus.

1. A movable barrier operator comprising:

a controller having a plurality of potential operational status conditions defined, at least in part, by a plurality of operating states;

a movable barrier interface that is operably coupled to the controller;

a wireless status condition data transmitter that is operably coupled to the controller, wherein the wireless status condition data transmitter transmits a status condition signal that:

corresponds to a present operational status condition defined, at least in part, by at least two operating states from the plurality of operating states; and

comprises an identifier that is at least relatively unique to the movable barrier operator, such that the status condition signal substantially uniquely identifies the movable barrier operator.

Chamberlain Grp. v. Techtronic Indus. Co., 935 F.3d 1341, 1348 (Fed. Cir. 2019) (invalidating cl. 1 of U.S. Pat. No. 7,224,275).

Bridge & Post v. Verizon

1. A method of processing data sent from a user of a client computer over a network, comprising:

intercepting a request . . .

creating a unique device identifier associated with hardware and corresponding to the client computer from the non-personal information, wherein the unique identifier is based directly on at least one of a MAC address, port identifier, or hardcoded identifier embodied in software or hardware and assigned to the client computer;

generating a local user identifier for the client computer by performing a one-way hashing operation on the unique device identifier;

deriving instance information based on request timing information provided by the client computer, and geographic location and demographic information for the client computer from information provided by a remote authentication server on the network;

generating a request identifier associated with the intercepted request by combining and encrypting, in a tag process executed on the routing device, the local user identifier, instance information, and geographic location and demographic information in an alphanumeric string;

embedding the alphanumeric string in an extensible field of a packet within the request to generate a tagged request, wherein the extensible field comprises a portion of an HTTP header field of the packet that is normally unused or essentially left blank;

...

Bridge & Post v. Verizon Commc'ns, Inc., 778 F. App'x 882, 890 (Fed. Cir. 2019)
(invalidating cl. 1 of U.S. Pat. No. 8,862,747).

U.S. Patent No. 9,838,213

PARAMETERIZED QUALITY OF SERVICE ARCHITECTURE IN A
NETWORK

'213 Patent, Amended Complaint Allegations

1. A communication method implemented in a Network Coordinator (NC) node of a communication network of a premises, the method comprising:

broadcasting to a plurality of nodes of the network, a request for a guaranteed quality of service flow in the network from a source node to at least one egress node, the plurality of nodes of the network to which the NC node broadcasts the request including at least the source node and the at least one egress node;

receiving a first response to the request from the source node, wherein the source node is the point of origin for the purposes of the guaranteed quality of service flow for data to be communicated within the guaranteed quality of service flow, the first response indicating whether the source node has available resources to support the guaranteed quality of service flow;

receiving a second response to the request from the at least one egress node indicating whether the at least one egress node has available resources to support the guaranteed quality of service flow; and

if the source node and the at least one egress node have available resources to support the guaranteed quality of service flow, then allocating resources for the guaranteed quality of service flow;

if the source node and the at least one egress node do not have available resources to support the guaranteed quality of service flow, then:

...

160. Claim 1 of the '213 Patent recites multiple elements that were not routine or conventional activity in the particular technological environment of logical point-to-point networks that used an NC node as of the priority date of the '213 Patent, including logical networks running on a conventional coaxial network.

161. The element of “broadcasting to a plurality of nodes of the network, a request for a guaranteed quality of service flow in the network from a source node to at least one egress node, the plurality of nodes of the network to which the NC node broadcasts the request including at least the source node and the at least one egress node” recites a technological capability that was not routine or conventional as of the priority date of the '213 Patent. As of that date, initiating a guaranteed quality of service flow in a logical point-to-point network running on a conventional coaxial network was not a routine or well-known activity for the reasons explained in Paragraphs 135 to 143 above.

162. The elements of “receiving a first response to the request from the source node, wherein the source node is the point of origin for the purposes of the guaranteed quality of service flow for data to be communicated within the guaranteed quality of service flow, the first response indicating whether the source node has available resources to support the guaranteed quality of service flow” “receiving a second response to the request from the at least one egress node indicating whether

the at least one egress node has available resources to support the guaranteed quality of service flow” recite technological capabilities that were not routine or conventional as of the priority date of the '213 Patent. As of that date, determining whether the endpoint nodes of a data flow have the available resources to guarantee a quality of service flow in a logical point-to-point network was not a routine or well-known activity for the reasons explained in Paragraphs 135 to 143 above.

'213 Patent, Amended Complaint Allegations

1. A communication method implemented in a Network Coordinator (NC) node of a communication network of a premises, the method comprising:

broadcasting to a plurality of nodes of the network, a request for a guaranteed quality of service flow in the network from a source node to at least one egress node, the plurality of nodes of the network to which the NC node broadcasts the request including at least the source node and the at least one egress node;

receiving a first response to the request from the source node, wherein the source node is the point of origin for the purposes of the guaranteed quality of service flow for data to be communicated within the guaranteed quality of service flow, the first response indicating whether the source node has available resources to support the guaranteed quality of service flow;

receiving a second response to the request from the at least one egress node indicating whether the at least one egress node has available resources to support the guaranteed quality of service flow; and

if the source node and the at least one egress node have available resources to support the guaranteed quality of service flow, then allocating resources for the guaranteed quality of service flow;

if the source node and the at least one egress node do not have available resources to support the guaranteed quality of service flow, then:

...


163. The element of “if the source node and the at least one egress node have available resources to support the guaranteed quality of service flow, then allocating resources for the guaranteed quality of service flow” and “if the source node and the at least one egress node do not have available resources to support the guaranteed quality of service flow, then . . . transmitting a message comprising information describing the maximum data rate that would have resulted in a successful request for a guaranteed quality of service flow” recite technological capabilities that were not routine or conventional as of the priority date of the '213 Patent. As of that date, establishing a guaranteed quality of service flow in a logical point-to-point network if the endpoint nodes of a data flow have available resources to guarantee a particular bandwidth, or alternatively determining a maximum bandwidth, was not a routine or well-known activity for the reasons explained in Paragraphs 135 to 143 above.

164. As of the priority date of the '213 Patent, subscribers' on-premises communication networks were not equipped to handle the growing demand for Internet services, including multimedia applications such as video streaming. Prioritizing data flow by data type and guaranteeing bandwidth for a particular data type was not a routine or well-known activity in conventional coaxial networks for the reasons explained in Paragraphs 135 to 143 above.

U.S. Patent No. 10,432,422

PARAMETERIZED QUALITY OF SERVICE ARCHITECTURE IN A
NETWORK

U.S. Patent No. 10,432,422



US010432422B2

(12) **United States Patent**
Hyslop et al.

(10) **Patent No.:** US 10,432,422 B2
(45) **Date of Patent:** Oct. 1, 2019

(54) **PARAMETERIZED QUALITY OF SERVICE ARCHITECTURE IN A NETWORK**

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(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 30 days.

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H04L 12/483 (2006.01)
(Continued)

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CPC *H04L 12/483* (2013.01); *H04W 74/96* (2013.01); *H04L 12/2601* (2013.01)

(58) **Field of Classification Search**
USPC 370/229, 230, 230.1, 231, 232, 235, 236, 370/238, 252, 346
See application file for complete search history.

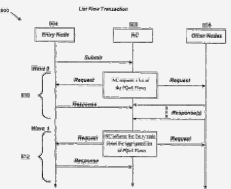
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ABSTRACT
A communication system and method including the steps of receiving a first request to initiate a guaranteed quality of service flow in a network, broadcasting a second request from a Network Coordinator to a plurality of nodes connected to the network and receiving a first response to the second request from at least one ingress node. The method further includes receiving a second response to the second request from at least one egress node indicating whether the at least one egress node has available resources to receive the guaranteed quality of service flow and allocating resources for the guaranteed quality of service flow if the at least one ingress node has available resources to transmit, and the at least one egress node has available resources to receive, the guaranteed quality of service flow.

20 Claims, 11 Drawing Sheets



Title: Parameterized quality of service architecture in a network

Filing Date: December 5, 2017

Issue Date: October 1, 2019

Abstract Idea: Forming an aggregated data traffic list by requesting and receiving information from nodes within a network about scheduled data transmissions

'422 Patent, Amended Complaint Allegations

1. A communication network comprising:

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communicate a second message to each requested node of the plurality of requested nodes, the second message requesting from said each requested node a list identifying PQoS flows for which said each requested node is an ingress node;

receive, from said each requested node a respective third message comprising a list identifying PQoS flows for which said each requested node is an ingress node;

form an aggregated list of PQoS flows comprising each respective list identifying PQoS flows from each received third message; and

...

176. Claim 1 of the '422 Patent recites multiple elements that were not routine or conventional activity in the particular technological environment of communications networks as of the priority date of the '422 Patent.

177. The elements of “communicate a first message to the NC node requesting a list comprising PQoS flows of the communication network” and “communicate a second message to each requested node of the plurality of requested nodes, the second message requesting from said each requested node a list identifying PQoS flows for which said each requested node is an ingress node” recite a technological capability that was not routine or conventional as of the priority date of the '213 Patent. As of that date, requesting a list of existing guaranteed quality of service flows in a network was not a routine or well-known activity for the reasons explained in Paragraphs 135 to 143 above.

'422 Patent, Amended Complaint Allegations

1. A communication network comprising:

...

communicate a second message to each requested node of the plurality of requested nodes, the second message requesting from said each requested node a list identifying PQoS flows for which said each requested node is an ingress node;

receive, from said each requested node a respective third message comprising a list identifying PQoS flows for which said each requested node is an ingress node;

form an aggregated list of PQoS flows comprising each respective list identifying PQoS flows from each received third message; and

...

178. The element of “receive, from said each requested node a respective third message comprising a list identifying PQoS flows for which said each requested node is an ingress node” recites a technological capability that was not routine or conventional as of the priority date of the '213 Patent. As of that date, identifying resource commitments of existing guaranteed quality of service flows of a source or ingress node in a logical point-to-point network was not a routine or well-known activity for the reasons explained in Paragraphs 135 to 143 above.

179. The element of “form an aggregated list of PQoS flows comprising each respective list identifying PQoS flows from each received third message” recites a technological capability that was not routine or conventional as of the priority date of the '213 Patent. As of that date, identifying and aggregating resource commitments of existing guaranteed quality of service flows of all source or ingress nodes in a logical point-to-point network was not a routine or well-known activity for the reasons explained in Paragraphs 135 to 143 above.

180. As of the priority date of the '422 Patent, subscribers' on-premise communication networks were not equipped to handle the growing demand for Internet services, including multimedia application such as video streaming. Prioritizing data flow by data type and guaranteeing bandwidth for a particular data type was not a routine or well-known activity in conventional coaxial networks for the reasons explained in Paragraphs 135 to 143 above.